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Reviews and Notes on Literature.

The Study of the Biology of Ferns by the Collodion Method; for Advanced Collegiate Students. By Geo. F. Atkinson, Ph. B., Associate Professor of Cryptogamic Botany; Cornell University, 8vo. pp. 134, 163 figures, New York. Macmillan & Co., 1894.

This book is designed for laboratory instruction and for reference on the development and structure of ferns. It consists of two parts; Part I. is descriptive and deals in full with the life history of ferns; Part II. deals with methods of study.

The descriptive portion of the work is arranged in seven chapters, six chapters being devoted to the leptosporangiate homosporous Filicineæ, and one chapter to the Ophioglosseæ. The chapters on the ferns trace in detail the development, morphology and anatomy of the gametophytic and sporophytic phases. The text is in no sense a compilation, but is written after a thorough-going and serious investigation by the author, using the collodion method as a means of bringing the material under contribution, so that in a very large measure it is written from nature revealed by original preparations. One unique feature of the work is the result of a critical examination by the author of the structure of the sporangium in the different orders of ferns and the dispersion of the spores. In the light of this study it is clearly shown that the customary statements regarding the extent of the annulus must be modified.

The illustrations are all original from camera lucida sketches, accompanied by a magnified micrometer scale, so that the reader can at once compute the magnification. All of the illustrations of sections are from objects prepared by the Collodion Method, and several of them from preparations made by students of the author during their ordinary laboratory work. The old method of free hand sectioning rendered it an extremely difficult task even for an expert to make satisfactory sections of the delicate prothalline tissue. The profuse illustrations in this book, representing as they do the entire range of development, the chief features of anatomy, and a comprehensive treatment of the structure of the sporangia of the different orders, are evidence of the comparative ease with

which students may now, by this method, overcome obstacles which heretofore have stood in the way.

From the intermediate position which ferns occupy in the plant kingdom their life history presents a generalized view of the chief phenomena of plant life, and they are therefore admirably suited for studies of the biological aspect of botany, and form a suitable introduction to this phase of botanical instruction. The book is suited to assist students in laboratory classes in successfully tracing out the more difficult phases in the development of fern organs. The descriptive part affords a convenient means of reference at any step of the work, while the practical part deals with methods, preparation of material and instructions for prosecuting the various phases of the investigation, and is to be used as a laboratory guide. By its use, as first tested by the author in his own classes, the students are enabled to make with precision and accuracy permanent microscopic preparations of all the stages of development. Especial success has been had in adapting the collodion method to the handling of the delicate prothalline tissue, sexual organs and embryo, it being better suited to such delicate tissue than the paraffine method, and the preparation of material can be carried through in less time and with far less trouble. Permanent microscopic sections thus made serve the purpose of study for future reference, and, if desired, for class illustration.

The descriptive part occupies such a prominent part of the book that it will commend itself also to those who do not contemplate the practical study, but desire in compact form a much fuller account of fern history than can be obtained in ordinary textbooks.

Manual of the Botany of the Region of San Francisco Bay, being a Systematic Arrangement of the higher Plants growing spontaneously in the Counties of Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, San Mateo and San Francisco, in the State of California. Edward Lee Greene. (8vo., pp. 328, Cubery & Co., San Francisco, 2 Feb., 1894).

Descriptive local floras are altogether too few, and are consequently very welcome, and if produced as the one which lies before us after an exhaustive study during many years of the plants themselves in the field and laboratory, cannot fail to have a lasting

effect on the botany not alone of the area they cover, but of the world. The volume here reviewed is essentially an original piece of work. One sees at once by an inspection of its pages that the author has not been content to accept the dictum of previous writers, but that his descriptions have been drawn from his own material and his conclusions reached from his own observations. The great value of this kind of work is obvious, for it presents an entirely new conception of the subject matter.

Departing from the sequence of orders taken up by him in the *Flora Franciscana* Professor Greene now adopts with slight modifications the arrangement as outlined in Baron von Mueller's last edition of the "*Census of Australian Plants*," placing the *Choripetelæ Hypogynæ* as the first division of the *Dicotyledons* and ending with *Monocotyledons*, of which sub-class only the orders *Orchidaceæ*, *Iridaceæ* and *Liliaceæ* are taken up, the lower orders being excluded on the statement that "a number of genera and species much greater than the beginner may master in one season's work, or in three," are included in the ninety orders treated. Professor Greene evidently does not accord much value to the modern notion of proceeding from the simple to the complex; perhaps for the purpose for which his *Manual* has been written for "persons desiring to make some beginnings in the systematic botany of Middle California" the arrangement adopted is as good as anything.

A considerable number of new species are proposed, and many new views advanced on the limitations of genera, especially in the order *Compositæ*, tending principally to maintaining more genera than have recently been recognized. Several of these are proposed as new. The descriptions are concise, clearly written and well contrasted. Keys to the genera are given for each order and the statements of the more characteristic features of the species are set in italic type. Professor Greene questions the wisdom of this in his preface, remarking on the temptation it offers to students to pass over all the descriptive matter except the keys and the italicised words. In our opinion it is advantageous despite the objection cited against it.

In nomenclature the maintenance of the oldest specific name has been consistently followed, and the first author cited in paren-

theses. The author has carried out his long-cherished plan of taking up a large number of pre-Linnæan genera, going so far this time as to use some not adopted by Linnæus. He says of this position that he "is convinced that the day is coming, and with a fair rate of speed, when the employing generic names which Linnæus substituted for older ones, instead of such as have right of real priority, will no longer be thought of by those who name priority as a leading principle in plant nomenclature." In this he may be correct, but we must say that the expressions of botanists all over the world, during the past few years, appears to us to indicate that the point of departure for biological nomenclature is becoming more and more firmly fixed at the Linnæan time.

The book is handsomely printed, typographical errors are few and must prove, to those who will use it in its own area, in the words of the author "indispensable, at least until some worthier treatise shall take its place," an event which we do not anticipate observing in the near future.

N. L. B.

Juncus marginatus and its Varieties. Frederick V. Coville (Proc. Biol. Soc. Washington, 8: 121-128, 1893).

After an exhaustive study of this species as represented in the larger American herbaria, Mr. Coville groups the forms under *J. marginatus* type, which ranges from Maine and Ontario to Florida and Missouri; *J. marginatus aristulatus* (*J. aristulatus* Michx., *J. biflorus* Ell.) occurring from Southern New York to Florida, west through the Gulf States to Texas, and northward in the Mississippi Valley to Michigan, and found also in Guatemala and Brazil, and *Juncus marginatus setosus*, a new variety, occurring from Kansas and Nebraska to Arizona and Mexico; *aristulatus* is stated to exhibit a full series of intergrades with the type; in *setosus* the full intergradation was not observed.

The treatment of these forms made by Mr. Coville is a capital illustration of one method of disposing of them. Another method would be to regard them all as species.

N. L. B.

Annual Reports of the State Botanist of the State of New York.

Charles H. Peck (from the 45th and 46th Reports of the New York State Museum of Natural History, pamphlets, pp. 42 and 69, Albany, 1893).

Mr. Peck's annual reports for 1891 and 1892 appeared in close succession during the autumn of 1893. The form of his previous reports is preserved, giving general notes on the work of his department, a list of plants added to the State herbarium, a list of contributors and their contributions, notes on plants not before reported by him as occurring within the State, and remarks and observations on various species, under which heading in both reports a large number of fungi are described as new species.

Monographs of the New York species of *Omphalea*, *Pluteola* and *Galera* are appended. N. L. B.

Abutilon vitifolium. J. D. Hooker (Bot. Mag. t. 7328, December, 1893).

Illustration and description of this fine Chilean species.

Neue Asiatische und Amerikanische Gentianien. N. J. Kusenow (Act. Hort. Petrop. 13: 52-64, 1893).

Four new species of American Gentians are here described as new—*G. scaberrima*, said to be related to *G. Saponaria* and *G. Elliottii*, and which appears from the description to be a narrow-leaved form of the latter, *G. Grayi*, based on a specimen collected by H. C. Beardslee in Michigan and labelled *G. puberula* and said to resemble both *G. puberula* and *G. linearis*, and which we do not satisfactorily refer to any species known to us; if any one in America possesses a duplicate of this collection we should be glad to see it; also *G. Californica* from California and *G. ovatiloba* from Mexico (Bourgeau, No. 1123 bis.). N. L. B.

Proceedings of the Club.

WEDNESDAY EVENING, FEBRUARY 28, 1894.

The President in the chair and fourteen persons present.

Mrs. Britton announced the death of Dr. Richard Spruce, one of our corresponding members and a botanist of distinction. Dr. Spruce was connected with the work of collecting plants and seeds of the *Cinchona* trees for introduction to culture in British India. At this time and subsequently, he made great collections of plants in Peru and upon the upper Amazon, and he has been